UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/918,378	07/30/2001	Thomas J. Kenney	NC25840 (NOKI02-25840)	9959

30973	7590	03/10/2005

SCHEEF & STONE, L.L.P.
5956 SHERRY LANE
SUITE 1400
DALLAS, TX 75225

EXAMINER
GREY, CHRISTOPHER P

ART UNIT	PAPER NUMBER
2667	

DATE MAILED: 03/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	09/918,378	KENNEY ET AL.
	Examiner	Art Unit	
	Christopher P Grey	2667	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>30 July 2001</u>.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>30 July 2001</u> is/are: a)☐ accepted or b)☒ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Drawings

1.   New corrected drawings in compliance with 37 CFR 1.121(d) are required in this

application because drawings and labels are handwritten.

Applicant is advised to employ the services of a competent patent draftsperson

outside the Office, as the U.S. Patent and Trademark Office no longer prepares new

drawings. The corrected drawings are required in reply to the Office action to avoid

abandonment of the application. The requirement for corrected drawings will not be held

in abeyance.

2.   The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5)

because they do not include the following reference sign(s) mentioned in the

description:

(a) Page 12 line 15 discloses an element 116, which is not present in fig 2.

(b) Page 12 line 16 discloses an element 178, which is not present in fig 2.

(c) Page 15 line 6 discloses a line 132, which is not present in fig 3.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in

reply to the Office action to avoid abandonment of the application. Any amended

replacement drawing sheet should include all of the figures appearing on the immediate

prior version of the sheet, even if only one figure is being amended. Each drawing sheet

submitted after the filing date of an application must be labeled in the top margin as

either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the

examiner does not accept the changes, the applicant will be notified and informed of

any required corrective action in the next Office action. The objection to the drawings

will not be held in abeyance.

Claim Objections

3.   Claim 4 is objected to because of the following informalities:

Claim 4 discloses a <u>siegnal</u> , which the examiner believes to be a typographical error.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4.   Claims 1and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Ling

et al. (US 6377607)

<u>Claim 1</u>   Ling et al. (Ling 'hereinafter') discloses a first circuit (1st operator) for

receiving and extracting a pilot signal (first data type), and a pilot channel by which this

is done (Col 3 line 55- Col 4 line4 and Col 12 lines 62-67). Ling then discloses a second

circuit (1st operator) providing a weighted signal (representation) subsequent to

communication upon the channel (Col 4 lines 47-60).

Ling discloses a first circuit (2nd operator) for receiving and extracting a data signal (2nd data type), and a data channel by which this is done (Col 3 line 55- Col 4 line4 and Col 12 lines 62-67). Ling then discloses a second circuit (2nd operator) providing a weighted signal (representation) subsequent to communication upon the channel (Col 4 lines 47-60).

Ling discloses a channel estimate circuit that computes a channel estimate (Col 10 lines 48-53), where a pilot signal is used to calculate a phase channel estimate (Col 3 lines 10-19). Ling discloses a pilot channel being filtered and an estimate being computed (Col 13 line 15-20 and Col 14 line 25-27). Ling also discloses an estimate of the phase of the data channel being computed (Col 12 lines 62- Col 13 line 10).

Claim 13   Ling et al. (Ling 'hereinafter') discloses a first circuit receiving and extracting a pilot signal (first data type), and a pilot channel by which this is done (Col 3 line 55- Col 4 line4 and Col 12 lines 62-67). Ling then discloses a second circuit providing a weighted signal (representation) subsequent to communication upon the channel (Col 4 lines 47-60).

Ling discloses a first circuit receiving and extracting a data signal (2nd data type), and a data channel by which this is done (Col 3 line 55- Col 4 line4 and Col 12 lines 62-67). Ling then discloses a second circuit providing a weighted signal (representation) subsequent to communication upon the channel (Col 4 lines 47-60).

Ling discloses a channel estimate circuit that computes a channel estimate (Col 10 lines 48-53). Ling also discloses an estimate of the phase of the data channel being computed (Col 12 lines 62- Col 13 line 10).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5.   Claim 2, 3, 4, 7, 8, 9, 10, 11, 12, 14, 15, 16, 18, 19 and 20 are rejected under 35

U.S.C. 103(a) as being unpatentable over Ling et al. (US 6377607) in view of Montojo et

al. (US 6693920)

Claim 2, 14   Ling discloses a pilot data being transmitted on a pilot channel and data

signals being transmitted on a data channel (Col 12 line 62- Col 13 line 10). Ling also

discloses computing a channel estimate and providing a weighted (representation)

signal (Col 4 lines 47-60).

Ling does not specifically disclose a MAC channel, however Montojo et al.

(Montojo 'hereinafter') discloses within a communication environment where the quality

measurement is computed of a number of channels, particularly a MAC channel (Col 5

lines 55-60 and Col 7 lines 25-32). It would have been obvious to one of the ordinary

skill in the art at the time of the invention to substitute the data channel disclosed by

Ling with the MAC channel as disclosed by Montojo in order to increase modulation

measurement accuracy (Col 7 lines 21-25).

Claim 3, 15   Ling discloses a path weighting circuit for weighting (multiplying by a

constant) a filtered pilot signal (Col 4 lines 47-60 and Col 14 lines 4-18 and Col 14 lines

43-49), where this weighted signal is the representation as disclosed in Claim 1.

Claim 4, 16   Ling discloses a data channel that is provided to a path weighting circuit (Col 12 line 62- line 10) for weighting the data signal, where it would have been obvious to one skill in the art at the time of the invention to weight the data signal by a second weighting factor, similar to the weighting factor disclosed in the rejection of claim 3 and 15.

Claim 7, 18   Ling discloses a communication system in a code division multiple access (CDMA) environment (Col 3 lines 55-67), with which IS-95 communication standards conform. Furthermore the background of the invention discloses an IS-95 system deploying 1xEV-DO technology (page 3 lines 6-14).

Ling discloses pilot data being transmitted on a pilot channel and data signals being transmitted on a data channel (Col 12 line 62- Col 13 line 10).

Ling also discloses computing a channel estimate responsive to values of the pilot signal and to values of the data signal (Col 4 lines 47-60).

Ling does not specifically disclose a pilot signal being communicated on a time-slot and a MAC channel, however Montojo discloses within a communication environment where the quality measurement is computed of a number of channels, particularly a MAC channel (Col 5 lines 55-60 and Col 7 lines 25-32). Montojo also discloses pilot burst distributed within time-slots (Col 3 lines 32-Col 4line 5), defining a pilot channel. It would have been obvious to one of the ordinary skill in the art at the time of the invention to substitute the data channel disclosed by Ling with the MAC channel and time-slot as disclosed by Montojo in order to increase modulation measurement accuracy (Col 7 lines 21-25).

Claim 8   Ling discloses a weighted pilot symbol being calculated by filtering the

pilot signal and using the noise and interference components (Col 13 lines 14-18)

multiplied by a channel estimate (Col 14 lines 27-49), where it would have been obvious

to one skilled in the art at the time of the invention to perform the same calculations to

the data signal rather than the pilot signal, as the data signal is sent to the path

weighting circuit as well (Col 13 lines 3-10). It would have also been obvious to one of

the ordinary skill in the art at the time of the invention to use the values of the noise and

interference to calculate the channel estimate as the relationship given above depicts

them as being inversely proportional.

Claim 9   Ling discloses a filter (element 186 in fig 7) for filtering the pilot signal (Col

13 lines 14-18), where it would have been obvious to one of the ordinary skill in the art

at the time of the invention to apply that filter to the data signal.

Claims10, 20   Ling discloses a base station (network station) broadcasting

different data signals to operating mobile stations (Col 3 lines 10-19), where it would

have been obvious to one of the ordinary skill in the art at the time of the invention to

equate data signals as MAC data signals.

Ling discloses a weighted pilot symbol being calculated by filtering the pilot signal

and using the noise and interference components (Col 13 lines 14-18) multiplied by a

channel estimate (Col 14 lines 27-49), where it would have been obvious to one skilled

in the art at the time of the invention to perform the same calculations and filtering to the

data signals rather than the pilot signal, as the data signal is sent to the path weighting

circuit as well (Col 13 lines 3-10). It would have also been obvious to one of the ordinary

skill in the art at the time of the invention to use the values of the noise and interference

to calculate the channel estimate as the relationship given above depicts them as being

inversely proportional.

Claim 11   Ling discloses a filter (element 186 in fig 7) for filtering the pilot signals

(Col 13 lines 14-18), where it would have been obvious to one of the ordinary skill in the

art at the time of the invention to apply that filter to the data signals

Claim 12   Ling discloses the weighted (representative) data signals being combined

(Col 14 lines 43-49).

Ling also discloses the combined data signals being sent to an LLR circuit that

comprises a channel estimator for computing a channel estimate responsive to the

combined data signals (Col 9 line 65-Col 10 line 9)

Claim 19   Ling discloses filtering a pilot signal to obtain a representation of the noise

and interference that is pilot data free(Col 14 lines 27-49), where it would have been

obvious to one of the ordinary skill in the art at the time of the invention to perform the

same computation on a data signal, where we equate a data signal as a MAC signal.

6.   Claims 5, 6 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Ling et al. (US 6377607) in view of Montojo et al. (US 6693920) in further view of

Mui (US 5150378)

Claim 5, 17   The combined teachings of Ling and Montojo disclose a path weighting

circuit for both data and pilot signals, however does not disclose a selector for selecting

weighting factors by indications of the pilot and data signal.

Mui discloses a weight generator (selector) means within a communication system that provides a weighting factor W to a first input (Col 5 lines 5-24). Therefore it would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the path weighting circuit as disclosed by the combined teachings of Ling and Montojo, with the weight generator as disclosed by Mui in order to generate/assign an appropriate weighting factor to indicate how good the phase estimate is (Col 5 lines 5-15).

Claim 6   The combined teachings of Ling and Montojo do not disclose a selection criteria, for maximizing a value of the estimated phase estimated by said estimator, however Mui discloses a weighting factor criteria (Col 5 lines 12-16), where the weighting factor generated indicates how good the phase estimate is and resolves any phase ambiguity (Col 5 lines 5-30).

Conclusion

7.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

(a) Crawford (US 6549583) discloses a method and apparatus of pilot phase estimation in a receiver where weighting is applied.

8.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Christopher P Grey whose telephone number is

(571)272-3160. The examiner can normally be reached on 6:30-3:00.

    If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Chi Pham can be reached on (571)272-3179. The fax phone number for the

organization where this application or proceeding is assigned is 703-872-9306.

    Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

Christopher Grey
Examiner
Art Unit 2667

C. Grey

3/7/05

AFSAR QURESHI *3/7/05*
PRIMARY EXAMINER